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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SUCHECKI, KRYSTYNA	
ART UNIT	**PAPER NUMBER**
2882	

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Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/789,539	DE MAN ET AL.	
	Examiner	Art Unit	
	Krystyna Suchecki	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7-10,13-21,23-27 and 29-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7-10,15-17,20,21,23,24,27 and 29-39* is/are rejected.

7)☒ Claim(s) *13,14,18,19,25 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1, 7-9, 13-15, 18-20, 23, 25-27, 29, 30 and 37 are objected to because of the following informalities: claims 1, 30 and 31 include permissive language where a detector "may generate" signals. This results in the claim not positively doing any detection. Being "configured to generate" would result in a claim that would be capable of acquiring a signal. Claim 1 additionally lacks antecedence for "streams of radiation". Clams 7 and 8 lack antecedence for "the" longitudinal axis. Claims 9, 13-15, 18-20, 23 and 25-27 are objected to for the lack of antecedence for "view" and the awkwardness of the phrase "set of view," when that phrase is used. A "field of view" is introduced in the independent claims and is used in some of the other dependent claims. Applicant should consistently use one phrase, preferably "field of view." Claim 37 includes "discrete" which has no antecedence. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7-10, 16, 17, 21, 23, 24, 29, 30 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsieh (US 6,421,412).

Regarding Claims 1, 7-10, 16, 17, 21, 23, 24, 29, 30 and 39 Hsieh teaches a CT imaging system, method for CT imaging and computer readable medium including a

program for imaging a field of view, comprising an x-ray source (Column 7, lines 17-19) comprising two or more emission points that are offset, or azimuthally offset, from one another such that the emission points sample substantially different, or non-overlapping, portions of a field of view, or that circumscribes a different radial region of a field of view than the other emission points, (Figure 4); a rotatable detector array comprising a plurality of detector elements, wherein each detector element may generate one or more signals in response to the streams of radiation (Column 6, lines 31-51 and Column 7, lines 20-21); and a system controller configure to control the two or more emission points, wherein the x-ray source comprises duplicate, or offset, emission points along a longitudinal axis, wherein the two or more emission points are rotated about the field of view such that each emission point, when activated, emits a respective stream of radiation from a respective view (Column 5, line 57- Column 6, line 14), wherein the two or more emission points are rotated by mechanically rotating the emission points about the field of view (Column 6, line 10-14), and further comprising a computer (44) system configured to receive the one or more signals and to process the one or more signals to generate one or more images (50); and an operator workstation configured to display the one or more images (items 44, 48, 50), and wherein the different portions of the field of view are different radial portions of the field of view (Figures 3 and 4).

Claims 1, 32 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Seppi (US 5,335,255).

Regarding Claims 1, 32 and 38, Seppi teaches comprising an x-ray source comprising two or more emission points that are offset from one another such that the emission points sample substantially different portions of a field of view (Column 3); a rotatable detector array (20, 45) comprising a plurality of detector elements, wherein each detector element may generate one or more signals in response to the streams of radiation (Figure 2); and a system controller (61, 80, 83) configure to control the two or more emission points, wherein at least one emission point is activated less frequently than at least one other emission point (Column 4, lines 55-65), and wherein the two or more emission points are radially offset from one another (Figure 3B).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 31 and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh in view of Taskar (US 6,674,837).

Regarding Claims 15, 31 and 33-37, Hsieh teaches a plurality of carefully placed emitters in a source (Figure 4).

Hsieh fails to discuss the flux of each respective stream of radiation as determined based on at least the respective view; at least one emission point as activated for less time than at least one other emission point; at least one emission point as operated at a lower energy or lower flux that at least one other emission point, a

radiation dose delivered by the CT imaging system as adjustable by operating at least one emission point differently that at least one other emission point such that at least one of the number of activations, the durations of activation, the energy or the flux of the respective emission points differ; or the two or more emission points as differently operated based on view to maintain a substantially uniform flux profile at the detector array.

Taskar teaches both conventional and improved imaging arrangements where the flux of each respective stream of radiation as determined based on at least the respective view (Column 6, lines 3-5); and at least one emission point as activated for less time than at least one other emission point (Column 2, lines 35-36; Column 6, lines 3-5; Taskar teaches this limitation since each pixel receives only necessary flux. Adequately exposed areas will have their emission points turned off before under-exposed areas, thereby resulting in emission points being activated for varying times with respect to one another in order to achieve the goal of reduced exposure levels.). Taskar also teaches at least one emission point as operated at a lower energy or lower flux that at least one other emission point (Column 4, lines 14-17); a radiation dose delivered by the CT imaging system as adjustable by operating at least one emission point differently that at least one other emission point such that at least one of the number of activations, the durations of activation, the energy or the flux of the respective emission points differ (Column 7, lines 33-39); or the two or more emission points as differently operated based on view to maintain a substantially uniform (uniformly adequate) flux profile at the detector array (Column 6, lines 3-8). The

individually addressable emitters are operated as above in order to provide more diagnostic information while reducing exposure levels while having high image resolution so that low-density, low-contrast images can be uncovered (Column 2, lines 35-41). Taskar also allows for optimal control of the pattern of x-rays emitted through the selection of materials and emitter outlay (Column 3, line 16- Column 4, line 44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the addressable emitters of Taskar for the plurality of carefully spaces emitters of Hsieh, since the emitters of Taskar also offer spacing control for pattern selection of x-rays and also enables more diagnostic information while reducing exposure levels while having high image resolution so that low-density, low-contrast images can be uncovered (Column 3, line 16- Column 4, line 44; Column 2, lines 35-41).

Response to Arguments

Applicant's arguments filed 03/23/06 have been fully considered but they are not persuasive.

Arguments with respect to the Mihara reference are persuasive. The new limitations in the claims drawn to a rotatable detector preclude application of Mihara. Rejections further in view of Popescu are also withdrawn.

Arguments with respect to the Sohval reference have been considered and are persuasive. Due to the new limitations drawn to "substantially different portions of a field of view" in the claims, the rejections under Sohval are withdrawn.

Arguments that Taskar would not be an obvious improvement to mechanically moving systems are not persuasive. Though Taskar does cite a possible benefit of the improved field emitter array as being a non-moving, low-cost system (Column 2, lines 18-21), Taskar has no language to limit the invention to this embodiment. Taskar discusses the use of traditional CT implementations (Column 1), but offers "contributions" to the art, which includes rotating systems (Column 2, especially at lines 22-23). Taskar discussed the drawbacks of a mechanically scanned system with a single, expanding beam (Column 6, line 7-10). The improved addressability of the multiple emitters of Taskar improves discrimination by the detector. Taskar does not preclude the use of a high resolution, or adequate contrast providing, emitter in a mechanically moving system. Rather, Taskar contrasts the beam shaping to show improved results. Absent language limiting Taskar only to the non-moving embodiments, Applicant's arguments are not persuasive.

Allowable Subject Matter

Claims 13, 14, 18, 19, 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claim objections set forth above would also need to be addressed.

Claims 13, 18 and 25 contain allowable subject matter for at least the reason that the prior art of record fails to teach or reasonably suggest a CT imaging system, method or computer readable medium including a program for imaging a field of view comprising an x-ray source comprising two or more emission points that sample

substantially different portions of a field of view; rotatable detector array; and system controller to control the two or more emission points wherein a first subset of the two or more emission points are activated at a first set of view and wherein a second subset of the two or more emission points are activated at a subset of the first set of view as claimed. Though Cesmeli (US 6,879,656) teaches the processing of data acquired from adjacent, and implicitly subset-type, fields of view (Columns 9-10), there is no mention of when sets or subsets of emission points are activated to acquire the fields of view.

Claims 14, 19 and 26 contain allowable subject matter for at least the reasons indicated in the Office action dated 05/31/05.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lai (US 6,256,369) is of interest for showing two sources with substantially non-overlapping fields of view (Figures 7,10 and 11).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ks

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER